Small Business Innovation Research/Small Business Tech Transfer

Autonomous Alignment Advancements for Eye-Safe Coherent Lidar, Phase I

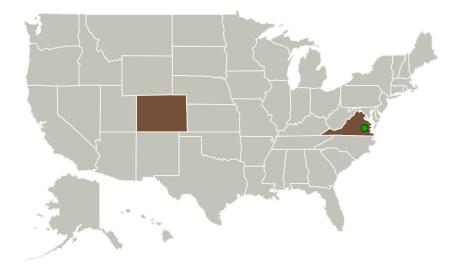


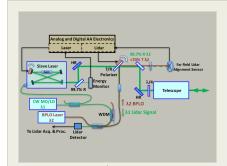
Completed Technology Project (2017 - 2017)

Project Introduction

Eye-safe coherent lidar technology holds increasing promise of meeting NASA's demanding remote 3D space winds goal near term. Highly autonomous, long-range coherent lidar systems may suffer significant SNR loss due to environment-induced component misalignment. Although systems can be engineered with the required alignment stability, the overall size, mass, and cost to produce coherent lidar systems will benefit from incorporating technology into the design that allows alignment to be optimized automatically while the system is in the field. This will especially benefit autonomous airborne and space based lidar systems where maintaining peak performance is critical without regular human intervention. Auto-alignment technologies will result in lower-cost sensors with greater autonomy and lessexotic mechanical engineering, resulting in high commercial potential due to the rapid introduction of lidar systems into the commercial marketplace for various applications. The technology aimed at maintaining laser and lidar alignment also has potential to correct for receiver lag angle in scanning lidar systems, which will facilitate faster scan rates, larger apertures, and greater area coverage rate capability. Beyond Photonics has a strong interest in solving these technological problems for relevant ground-based, airborne, and space-based unattended lidar systems. This Phase I effort will investigate auto-alignment designs exhibiting a high level of synergy between NASA's and other commercial vendor's requirements for laser auto-alignment, transmit/receive transceiver auto-alignment, and lag angle compensation.

Primary U.S. Work Locations and Key Partners





Autonomous Alignment Advancements for Eye-safe Coherent Lidar, Phase I Briefing Chart Image

Table of Contents

Project Introduction	1
Primary U.S. Work Locations	
and Key Partners	1
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3



Small Business Innovation Research/Small Business Tech Transfer

Autonomous Alignment Advancements for Eye-Safe Coherent Lidar, Phase I

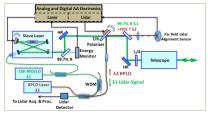


Completed Technology Project (2017 - 2017)

Organizations Performing Work	Role	Туре	Location
Beyond Photonics LLC	Lead Organization	Industry	Lafayette, Colorado
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Colorado	Virginia

Images



Briefing Chart Image

Autonomous Alignment Advancements for Eye-safe Coherent Lidar, Phase I Briefing Chart Image (https://techport.nasa.gov/imag e/133698)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Beyond Photonics LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

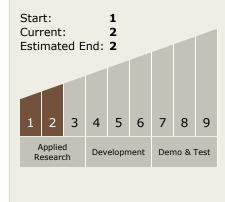
Program Manager:

Carlos Torrez

Principal Investigator:

Sammy Henderson

Technology Maturity (TRL)





Small Business Innovation Research/Small Business Tech Transfer

Autonomous Alignment Advancements for Eye-Safe Coherent Lidar, Phase I



Completed Technology Project (2017 - 2017)

Technology Areas

Primary:

- TX08 Sensors and Instruments
 □ TX08.1 Remote Se
 - └─ TX08.1 Remote Sensing Instruments/Sensors
 └─ TX08.1.5 Lasers

Tech®Port
Printed on 12/14/2022
06:47 PM UTC